

AUSTRALIAN ACARINA

THE GENERA *BRACHYCHTHONIUS* BERL. AND *COSMOCHTHONIUS* BERL. (HYPOCHTHONIDAE-ORIBATOIDEA)

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THE species of the genera dealt with in this paper are very small, colourless to yellow mites found inhabiting moss. Owing to their small size, under 0.30 mm. in length, special methods of collecting are required, generally by putting the moss through the special funnel invented by Berlese. Hitherto the genera have not been recorded from Australia, but recently in samples of moss brought back from Normanville (September, 1943) and Quorn, South Australia (November, 1943), I have found representatives of five species of which three can probably be referred to European forms, the others being new. The specific characters of these small mites, of which about a dozen species are described, are found in the presence or absence of dorsal sculpturing, and when present its nature, and more particularly in the structure and comparative length of the sensillary or pseudostigmal setae, and of the normal dorsal setae. Unfortunately workers on this group have been content with comparing the lengths of the dorsal setae of the various species in general terms and not in actual dimensions. With such mites as these inhabiting moss, and of which both the mosses and the mites are extremely archaic and cosmopolitan, or widely spread by commerce, or both, it is extremely difficult to refer specimens to descriptions from other countries without access to authentic material, unless actual setal lengths are given.

Consequently while some of the species here recorded from South Australia are only referred to European forms, the setal lengths of the latter are required for a final decision.

Genus *BRACHYCHTHONIUS* Berlese. 1910.

Acari Nuovi. Manip. VI. Redia 6, p. 219, 1910. Genotype *B. brevis* (Mich., 1888).

Belonging to the subfamily Hypochthonidae of the Oribatoidea, differentiated by the mandibles being more or less covered by the rostrum; a distinct separation of propodosoma and hysterosoma; the anal and genital openings occupying most of the area behind coxae IV, broadly contiguous, the anal opening usually narrowing posteriorly; and the hysterosoma with one or more transverse sutures. The genus is distinguished by two sutures forming 3 plates on the hysterosoma, of which the anterior suture is entire, and by having none or only a single lateral plate.

BRACHYCHTHONIUS cf. *PERPUSILLUS* Berl. 1910.

Acari Nuovi, Manip. VI. Redia 6, 220, fig. 41, 1910; *nec.* Jacot, 1936.

Fig. 1 A-C.

Light coloured species, 234 μ long by 117 μ wide. Sensillary setae 32 μ long with fusiform head of about half its length furnished with several longitudinal rows of 5 denticles in each; the basal cup is 12 μ long with the mouth 10 μ in diameter. Dorsal setae acicular-foliaceous with prominent rib, similar on both propodosoma and hysterosoma, rostral and interlamellar setae 16 μ long, remainder 13 μ .

Jacot, 1936 (*J. Elisha Mitchell Scientific Society*, 52 (2) 247) has referred a number of specimens from North Carolina to this species. In his description and very careful figure, however, he shows the posterior interlamellar setae between the pseudostigmal organs, and also the exopseudostigmal setae as being very much smaller and of a different form to the remainder of the propodosomal setae. In Berlese's figure, however, and in my Australian material all the propodosomal setae are of the same structure.

Loc. A number of specimens isolated from moss from Normanville, S. Aust., 9/43 (H. M. Cooper) by the Berlese funnel.

BRACHYCHTHONIUS cf. HORRIDUS Sellnick, 1929.

Tierwelt Mitteleuropas. Bd. III. Abt. 9, 23.

Fig. 1 D-G.

Light to yellowish species, 208μ long by 105μ wide. Sensillary setae 39μ in length, with fusiform head of half its length furnished with several longitudinal rows of 10-12 fairly long denticles; the basal cup about as long as its mouth is wide. Dorsal setae 24μ long, foliate with prominent midrib and ciliated or dentate margins, all setae similar except the pair (posterior interlamellar) between the pseudostigmal organs which are shorter and scale-like.

I can only refer these specimens to Sellnick's species as diagnosed in his key (*loc. cit.*). They are somewhat similar in the dorsal setae to Jacot's *fimbriatus* from North Carolina, but in the drawings and description of that species the exopseudostigmal setae are given as very much shorter than the rest and tri- to quinquetrous in form.

Loc. A number of specimens from moss from Normanville, S. Aust., 9/43. (H. M. Cooper).

BRACHYCHTHONIUS LONGIPILUS sp. nov.

Fig. 1. H-J.

Description. Yellowish species, 182μ long by 90μ wide. Sensillary setae 32μ long with fusiform head of half its length furnished with longitudinal rows of 10-12 fine fairly long denticles; the basal cup slightly longer than wide at the mouth. Dorsal sutures much wider than in other species, especially between the propodosoma and hysterosoma. Dorsal setae all long, 40μ , slightly curved and simple, not at all foliate, the rostral and anterior interlamellar setae slightly shorter but not otherwise different.

Loc. A few specimens from the same habitat and localities as above species. Also 9 specimens from debris under tree ferns, Waterfall Gully, S. Aust., 5/35. (R.V.S.).

Remarks. Abundantly distinct from all other described forms in the long simple dorsal setae.

BRACHYCHTHONIUS PARALLELUS sp. nov.

Fig. 1. K-M.

Description. A strongly yellow chitinized species with the dorsum sculptured in 4 parallel irregular longitudinal ridges. Length 185μ , width 96μ . Sensillary setae 32μ long, with fusiform head of half the length, furnished with longitudinal rows of denticles or ciliations; cup about twice as long as wide at the mouth. Dorsal setae very short, 11μ , fine simple, and all similar; those on the hysterosoma are placed on the longitudinal ridges.

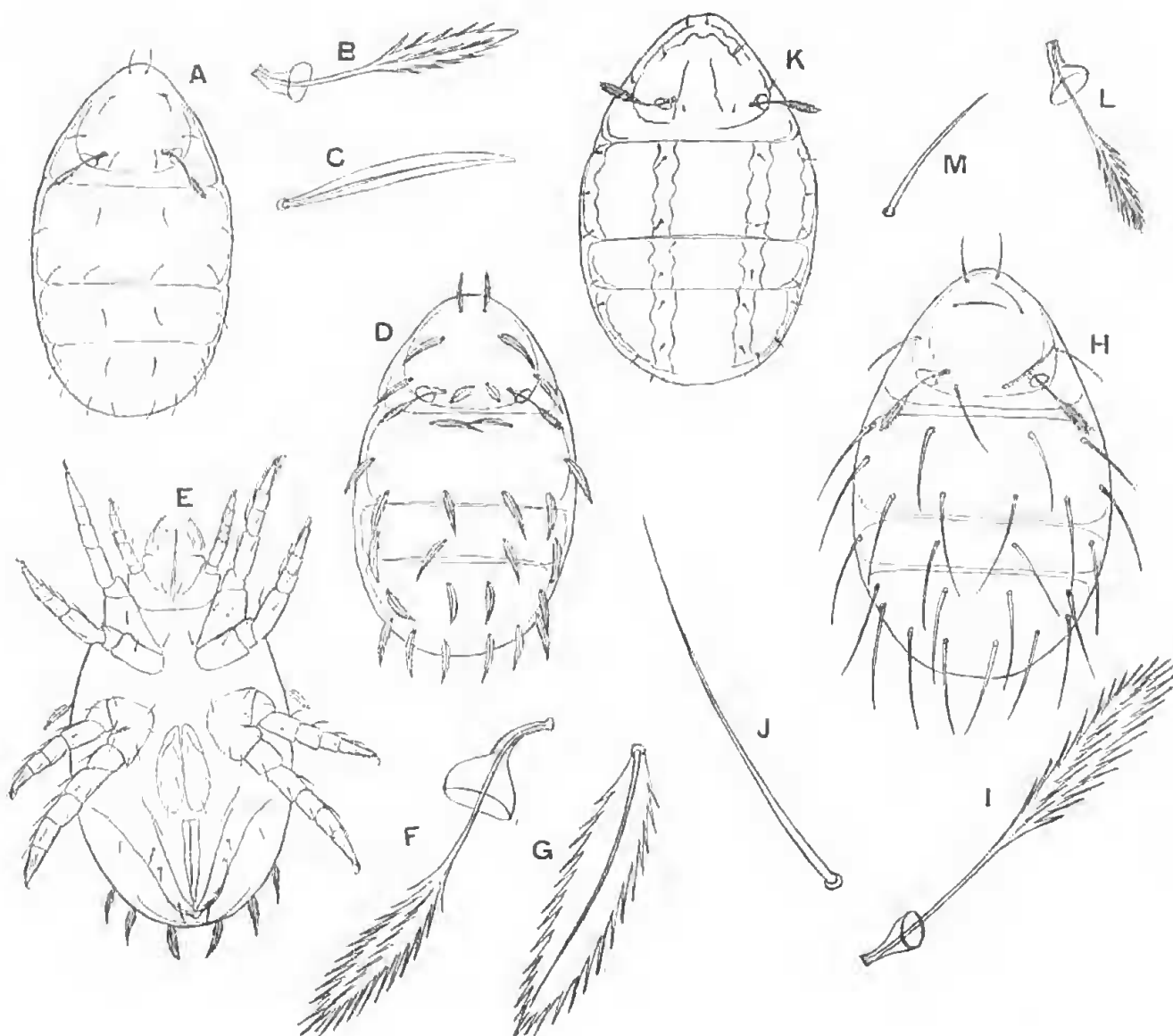


Fig. 1. A-C. *Brachychthonius* cf. *perpusillus* Berl. A. dorsum, B. sensillary organ and seta, C. dorsal seta; D-G. *B.* cf. *horridus* Sellnick. D. dorsum, E. ventral, F. sensillary organ and seta, G. dorsal seta; H-J. *B. longipilus* sp.n. H. dorsum, I. sensillary organ and seta, J. dorsal seta; K-M. *B. parallelus* sp.n. K. dorsum, L. sensillary organ and seta, M. dorsal seta.

Loc. A single specimen from the above habitat and locality. The species also occurs in similar habitat in the New Hebrides.

Remarks. This species might be included in the group of sculptured forms which includes the European *brevis* (Michael) but is abundantly distinct in the form of sculpturing.

Genus COSMOCHTHONIUS Berl., 1910.

Aeri Nuovi. Manip. VI. Redia VI 221. 1910. Genotype *Hypochthonius lanatus* Mich. 1888.

Hypochthonidae with the hysterosoma divided by 3 sutures into 4 divisions. Dorsal setae of the two median divisions long and long ciliated. Sensillary setae appearing spindle-like, long.

COSMOCHTHONIUS PLUMATUS Berl. 1910.

Acari Novi. Manip. VI. Redia VI. 1910, 221, pl. xx, fig. 48.

VAR. *AUSTRALICUS* NOV.

Fig 2. A-C.

Description. Colour light yellowish. Length 256μ , width 160μ . Hysterosoma with 3 suture lines dividing it into 4 sections. Propodosoma with sensillae 80μ long, ciliated and appearing spindle-like but only long ciliated on the apical half and only indistinctly and very shortly on basal half; with rostral, lamellar and interlamellar hairs, and a pair of hairs outside sensillae bases; all these hairs are

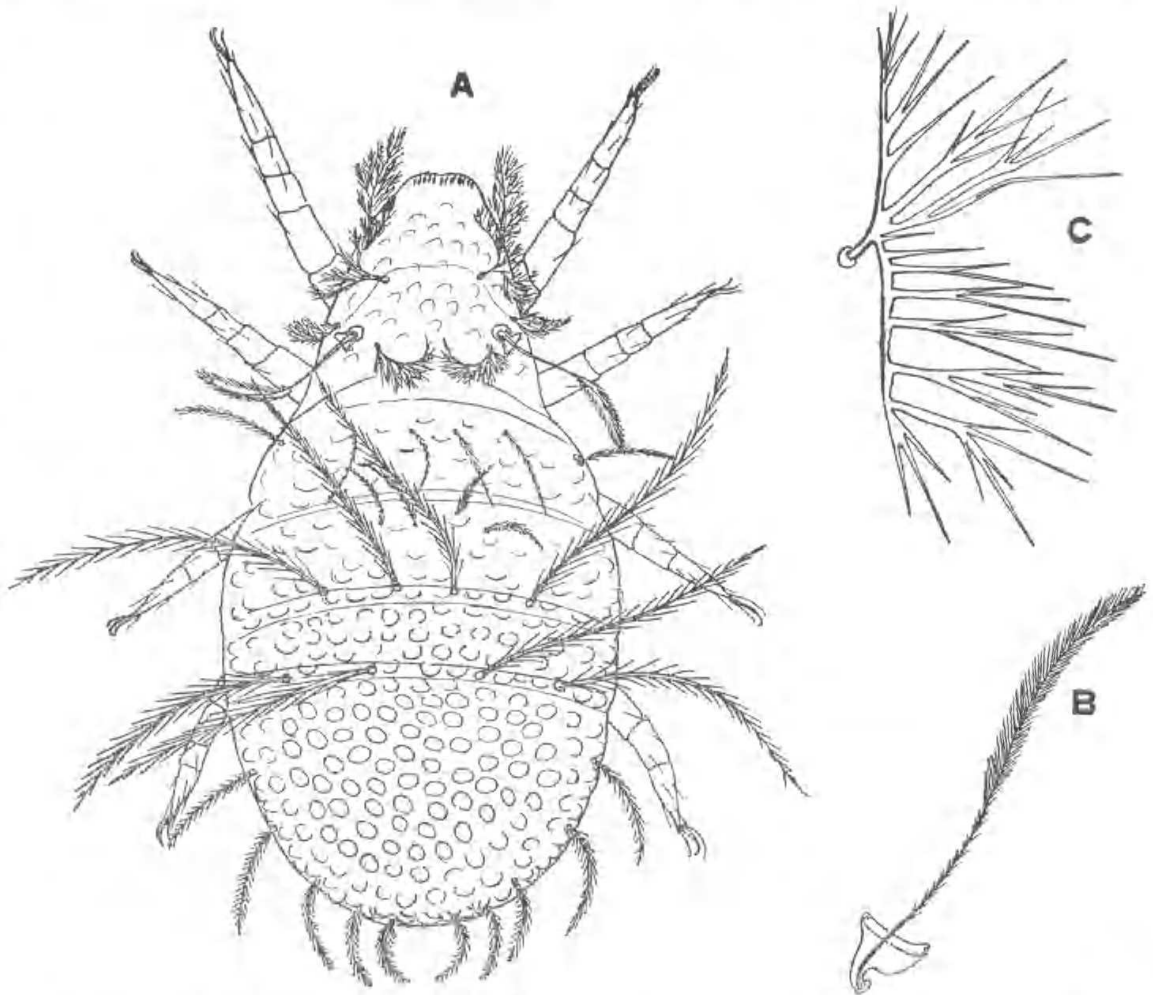


Fig. 2. *Cosmochthonius plumatus* v. *australicus* nov. A. dorsal view, B. pseudostigmal seta, C. lamellar seta.

strongly branched and aboriform, the lamellar hairs 48μ long are also doubly branched as in fig. 2C, the interlamellar hairs between sensillae bases are backwardly and inwardly curved. The first three divisions of the hysterosoma are narrow, the first with 4 finely ciliated setae 32μ long and a seta somewhat similar on each shoulder, the second division has 4 similar antero-median setae and the third and fourth divisions 4 long, 126μ and 110μ respectively, anterior ciliated setae with ciliations about 5 times as long as main stem is wide, the posterior division of the hysterosoma also with 10 submarginal and marginal setae as figured, $40-59\mu$ long. Hysterosoma with many strongly impressed pits becoming weaker anteriorly.

Legs short, tarsi with 3 claws, of which the median (empodium) is stronger than the others.

Loc. Two specimens from moss from Mt. Arden, 12 miles north of Quorn, S. Aust., Nov., 43 (H. M. Cooper); also six specimens from debris from under tree ferns, Waterfall Gully, S. Aust., 5/35. (R.V.S.).

Remarks. In the structure of the hairs, particularly those on the cephalothorax, these specimens agree with Berlese's figure (loc. cit.) of *C. plumatus*, but Berlese states that his species differs from the genotype *C. lanatus* (Mich.) in the hysterosoma in the "cuticle not scabrous, reticulate or otherwise impressed." The South Australian specimens are definitely ornamented on the hysterosoma (cf. fig. 2A), but otherwise agree entirely in the structure of the hairs with Berlese's very fine detailed figure. In Michael's figure of *lanatus* (Brit. Orib. II, pl. XLIX, fig. 15), the hairs are shown as very different, especially the lamellar hairs, while the ciliations of the long hysterosomal hairs are scarcely longer than the width of the main stem.

It seems therefore that these specimens must be referred to a variety of Berlese's species with the dorsal cuticle having impressed pits.